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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,987	10/29/2003	Masatoshi Yonekubo	117367	5325

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EXAMINER

ROY, SIKHA

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/694,987

Applicant(s)

YONEKUBO ET AL.

Examiner

Sikha Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 16-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 113005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I claims 1-15 in the reply filed on October 17, 2005 is acknowledged. The traversal is on the ground(s) that the search and examination of the entire application could be done without serious burden on the Examiner. This is not found persuasive because the two groups (group I for display panel and group II for method of manufacturing a display panel) would require divergent searches as evidenced by their different classification. The requirement is still deemed proper and is therefore made FINAL.

Claims 16-18 stand withdrawn from further consideration by the Examiner, 37 C.F.R. 10142(b) as being elected to a non-elected invention.

Specification

The disclosure is objected to because of the following informalities:

Page 7 line 7 'display device 19' should be replaced by --display elements 19--.

Appropriate correction is required.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 7, 11- 15 rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,091,384 to Kubota et al.

Regarding claim 1 Kubota discloses (Figs. 1,3,5 column 3 lines 34-65, column 4 lines 1-18) a display element comprising an emission layer having organic light-emitting layer 21 which emits light by voltage applied between the electrodes 2 and 6, a transmission layer 1 that transmits light emitted from the light-emitting layer, a total reflection surface 11a, 11b in the transmission layer 1 that is capable of totally reflecting at least a part of light radiated from the light-emitting layer in a direction of emission of the light-emitting layer.

Regarding claim 2 Kubota discloses the transmission layer 1 includes a transparent member (glass substrate), the side of the transparent member facing the emission layer having recesses 11, at least one lateral side 11a of each recess acting as the total reflection surface.

Regarding claim 7 Kubota discloses (Figs.1and 5) the display element comprises plurality of light-emitting layers, protrusions between the recesses being arranged at the same pitch as that of the light-emitting layers.

Regarding claim 11 Kubota discloses the light-emitting layer is an organic electro-luminescence light-emitting layer.

Regarding claim 12 Kubota discloses (Fig. 1) a display panel comprising an emission layer having plurality of light emitting layers (organic luminescent layers 4R,4G,4B) that emits light by voltage applied between electrodes 2 and 6 , transmission layer 1 that transmits light emitted from the light-emitting layer and a plurality of total reflection surfaces 11 in the transmission layer 1 that is capable of totally reflecting at least a part of light radiated from the light-emitting layers in a direction of emission of the light-emitting layers.

Claims 13 and 14 essentially recite the same limitations as of claims 2 and 7 respectively and hence are rejected for the same reasons.

Regarding claim 15 Kubota discloses (column 3 lines 62-65) the positive and negative electrodes are driven emitting light of different colors and hence it is inherent that the display panel comprises a drive unit which drives the light-emitting layers of the display panel.

Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,906,452 to Ichikawa.

Regarding claim 1 Ichikawa discloses (Fig. 2 column 4 lines 42-65) a display element 1 comprising an emission layer having a light-emitting layer 3 that emits light by a voltage applied between electrodes, a transmission layer 5 that transmits light emitted from the light-emitting layer and a total reflection surface (surface enclosing the lower refractive index region) 6 in the transmission layer that is capable of totally reflecting at least a part of light radiated from the light-emitting layer 3 in a direction of emission of the light-emitting layers.

Regarding claim 2 Ichikawa discloses (Fig.2) the transmission layer 5 includes a transparent substrate, with higher refractive index region 5, the side of the transparent member facing the emission layer having recesses (voids, the lower refractive index region) 6, at least one lateral surface of each recess acting as the total reflection surface.

Regarding claim 3 Ichikawa discloses (column 7 lines 1-5) the interior of the recesses (voids) is filled with gas.

Claims 1,2,4-9 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,639,350 to Sejkora.

Regarding claim 1 Sejkora discloses (Figs. 2a, 3 column 4 lines 8-42) a display element (illumination arrangement) comprising an emission layer having a light-emitting layer 7, a transmission layer 5 that transmits light emitted from the layer 7, a total reflection surface (recesses) 6 in the transmission layer that is capable of totally

reflecting at least a part of light radiated from the light-emitting layer 7 in a direction of emission of the light-emitting layers.

Regarding claim 2 Sejkora discloses (column 4 lines 58-61) the transmission layer includes a transparent substrate 4, the side of the transparent member facing the emission layer having recesses 6, at least one lateral surface of each recess acting as the total reflection surface.

Regarding claim 4 Sejkora discloses (Fig. 5a column 8 line 66 through line 10) the display element comprises a substrate 11 having the emission layer 15 on the surface thereof.

Regarding claim 5 Sejkora discloses (Fig. 5a column 9 lines 1-15, 26-59) the display element comprising substrate 11 having the emission layer on its surface, a bonding layer 12 that is formed between the transparent member 5 and the emission layer 15 so that a protrusion between the recesses of the transparent member is in optically close contact with the light emitting-layer.

Regarding claim 6 it is evident from Fig. 5a the thickness of the bonding layer 12 is smaller than the depth of the recesses.

Regarding claim 7 Sejkora discloses (Figs.3 and 5a) the display element comprises plurality of light-emitting layers, protrusions between the recesses being arranged at the same pitch as that of the light-emitting layers.

Regarding claims 8 and 9 Sejkora discloses (column 8 formula 7) the inclination angle of the total reflection surface (which is same as α in fig. 4a) is greater than 72.4°

(approximately 70°) considering the maximum emission angle $\gamma_{\max} = 60^\circ$ (column 6 lines 21-40) and n_s , the refractive index of the structural block 5 being 1.5.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,906,452 to Ichikawa as applied to claim 1 above, and further in view of JP 08-321381 to Furukawa et al.

Claim 10 differs from Ichikawa in that Ichikawa does not exemplify the display element further comprising a circularly polarizing plate that is disposed on the transmission layer adjacent to the emerging surface.

Furukawa in the same field of endeavor discloses (Fig1. Sections [0002], [0005]) a circularly polarizing plate (linearly polarized light plate and a phase contrast plate) disposed on the transmitting substrate 3. Furukawa further teaches this circularly polarized plate prevents external light reflected from the second electrode disposed below the light emitting layer and overlapping with the display and thus offers a legible organic EL display.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include a circularly polarized plate as taught by Furukawa disposed on

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the light emerging surface of Ichikawa for preventing any external light reflected from the second electrode disposed below the light emitting layer and overlapping with the display and thus offers a legible organic EL display.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,834,893 to Bulovic et al. discloses high efficiency organic light emitting devices with light directing structures.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (571) 272-2463. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sikha Roy

Sikha Roy
Patent Examiner
Art Unit 2879